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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/001,499	11/14/2001	Ligui Zhou	0179.0029	3237
26067	7590	07/19/2006	EXAMINER	
HEXCEL CORPORATION 11711 DUBLIN BOULEVARD DUBLIN, CA 94568			MAKI, STEVEN D	
			ART UNIT	PAPER NUMBER
			1733	
DATE MAILED: 07/19/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/001,499

Applicant(s)

ZHOU ET AL.

Examiner

Steven D. Maki

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>122705</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1733

1) A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5-8-06 has been entered.

2) Claims 1-6 and 8-38 are objected to because of the following informalities: In claims 1 and 17, "paralell" should be --parallel--. Appropriate correction is required.

3) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4) Claim 17-22 and 35-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 17 line 3, there is no antecedent basis for "said self-adhesive prepreg" and as such it is unclear if the preamble is describing the intended use of the method as being for a "prepreg face sheet" or a "self-adhesive prepreg". In claim 17, the following changes are suggested: (1) on line 1 insert --self-adhesive-- before "prepreg" and (2) on line 3 insert --face sheet-- after "self-adhesive".

5) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6) Claims 1-2, 8-11, 16-18, 21, 23-27, 30-32 and 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishi et al (EP 819723, already of record) in view of Recker et al (EP 392348, cited in IDS filed 7-6-04) and Japan 434 (JP 2-223434, newly cited).

Kishi et al and Recker et al are applied as in paragraph 6 of the office action dated 11-1-04 (paragraph 6 of the office action dated 11-1-04 is incorporated herein by reference). Also, the examiner's comments in paragraph 10 of the office action dated 6-2-05 and in paragraphs 3 and 9 of the office action dated 1-20-06 are incorporated herein by reference.

In the amendment filed 5-8-06, the limitation of the fillets having a specified "A dimension" and specified "B dimension" wherein "said A dimension is approximately equal to said B dimension" was added to claims 1 and 17.

As to claims 1 and 17, it would have been obvious to one of ordinary skill in the art to form the fillets during Kishi et al's process of bonding the prepreg to the honeycomb core such that the "A dimension" is approximately equal to the "B dimension" since (1) Kishi et al recognizes that in self-bonding of a prepreg to a honeycomb core to reduce weight, the viscosity of the resin of the prepreg should neither be too low nor too high in order to properly form the fillets between the skin panels and the honeycomb core (page 2 lines 25-38), (2) Kishi et al teaches using a thixotropy index of 2.5 to 40 and a minimum viscosity of 30-400 poise for the epoxy resin composition to improve fillet formation and self-adhesiveness of the prepreg to the honeycomb core (page 4 lines 26-34, page 5 lines 36-53, page 5 lines 14-28) and

Art Unit: 1733

(3) Japan 434 suggests using epoxy resin having a viscosity of 3-3000 poise to form a fillet for a honeycomb sandwich panel such that the ratio of the width "a" (dimension A) to the height "b" (dimension B) is 1 : 0.2 - 5 (abstract, figure) so as to reduce resin quantity and maintain strength. See abstracts and figure. During a partial oral translation of Japan 434 by a PTO translator, the following information was obtained: If viscosity is less than 3 poise, too much resin flows and fillet almost not formed. If viscosity is greater than 3000 poise, flow of resin is extremely poor and fillet cannot be formed. Also, see hand written notes for the table on page 5 of the copy of Japan 434. Hence, Kishi et al and Japan 434 suggest optimizing the formation of the fillet and thereby suggest the claimed limitation of A dimension of fillet being approximately equal to B dimension of fillet; this being especially true in view of (1) the illustration of the fillet in the figure of Japan 434 and (2) Japan 434's teaching of the ratio of the width "a" (dimension A) to the height "b" (dimension B) being 1 : 0.2 - 5 (abstract, figure) so as to reduce resin quantity (and thereby reduce weight) and maintain strength.

7) Claims 29, 34 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishi et al in view of Recker et al and Japan 434 as applied above and further in view of Hayes (US 3530087).

Hayes is applied as in paragraph 7 of the office action dated 11-1-04 (paragraph 7 of the office action dated 11-1-04 is incorporated herein by reference).

8) Claims 3-5, 12-14 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishi et al in view of Recker et al and Japan 434 as applied

Art Unit: 1733

above and further in view of Ghali et al (US 4945154) and optionally Portelli et al (US 5368922).

Ghali et al and the optional Portelli et al are applied as in paragraph 8 of the office action dated 11-1-04 (paragraph 8 of the office action dated 11-1-04 is incorporated herein by reference).

9) Claims 6, 15 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishi et al in view of Recker et al, Japan 434 and Ghali et al and optionally Portelli et al as applied above and further in view of Hayes et al.

Hayes et al is applied as in paragraph 9 of the office action dated 11-1-04 (paragraph 9 of the office action dated 11-1-04 is incorporated herein by reference).

10) Claims 9 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishi et al in view of Recker et al and Japan 434 as applied above and further in view of Maranci et al (US 4957801).

Maranci et al is applied as in paragraph 10 of the office action dated 11-1-04 (paragraph 10 of the office action dated 11-1-04 is incorporated herein by reference).

11) Claims 28, 33 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishi et al in view of Recker et al and Japan 434 as applied above and further in view of Japan '619 (JP 3-243619).

Japan 619 is applied as in paragraph 11 of the office action dated 11-1-04 (paragraph 11 of the office action dated 11-1-04 is incorporated herein by reference).

Remarks

12) Applicant's arguments with respect to claims 1-6 and 8-38 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 5-8-06 have been fully considered but they are not persuasive.

Applicant argues that Kishi et al provides no suggestions regarding the specific desired fillet shapes. With respect to the added subject matter of the specific fillet shape (dimension A being approximately equal to dimension B), note the new ground of rejection using newly cited Japan 434.

Applicant argues that Kishi et al fails to suggest that structural adhesives which are used conventionally to bond prepreg to honeycomb can also be used as the matrix resin in a self adhesive prepreg. This argument is off-point. Kishi et al discloses a self adhesive resin composition comprising epoxy resin, curing agent and additives for a prepreg to be bonded to a honeycomb. Kishi et al and Recker et al, when considered as a whole, motivate one of ordinary skill in the art to use both "viscosity control agent" (soluble thermoplastic) and "thermoplastic fillet forming particles" (differentially soluble engineering thermoplastic") to obtain desired fillet formability and self adhesiveness and increased toughness (improved compression strength after impact). It is emphasized that (1) Kishi et al discusses the use of soluble thermoplastic and thermoplastic organic particles for improving toughness in the epoxy resin composition for the self adhesive prepreg and (2) Recker et al specifically suggests and motivates one of ordinary skill in the art to use the *combination* of soluble thermoplastic *and* differentially soluble

Art Unit: 1733

thermoplastic (page 5 lines 5-12, 27-32) in an epoxy resin composition to provide increased toughness and, in particular, significant resistance to impact induced damage. It is also emphasized that there is no difference between the differentially soluble thermoplastic particles of Recker et al and the claimed thermoplastic fillet forming particles. Both of these particles comprise thermoplastic such as polyethersulfone. Both of these particles are not dissolved in the epoxy resin of the final resin mixture for the prepreg, but are dissolved during curing. Both of these particles have a size in the micrometer range (2-35 micrometers in Recker et al and 1-100 micrometers in claim 21). Both of these particles are for increasing toughness.

Applicant comments that Kishi and Recker are in the same general field of endeavor (i.e. resins and prepreps). See sentence spanning pages 10 and 11 of response filed 5-8-06. Examiner agrees that Kishi et al and Recker et al are in the same field of endeavor of epoxy resin compositions for fiber reinforced prepreps for the aerospace industry. Examiner adds that Kishi et al and Recker et al both teach using soluble thermoplastic in the epoxy resin composition and that Kishi et al and Recker et al both teach using organic thermoplastic particles to improve toughness. The suggestion to use differentially soluble thermoplastic particles (particles that dissolve during curing) as the particles for improving toughness comes from Recker et al.

Applicant argues that there is no reasonable expectation of success that the resin of Recker et al can be used to provide the self adhesive prepreg as required by Kishi et al. There is a reasonable expectation of success for using Recker et al's differentially soluble thermoplastic particles in Kishi et al's epoxy resin composition for a

Art Unit: 1733

prepreg such that Kishi et al's epoxy resin composition comprises both "viscosity control agent" (soluble thermoplastic) and "thermoplastic fillet forming particles" (differentially soluble thermoplastic) since (1) Recker et al teaches using the differentially soluble thermoplastic particles in an epoxy resin composition for a prepreg, (2) Kishi et al teaches at page 8 lines 30-32, 44-49 that thermoplastic particles for improving toughness *may be added* to components [A], [B] and [C] of an epoxy resin composition for a prepreg wherein component [C] can be soluble thermoplastic and (3) Recker et al teaches that the differentially soluble thermoplastic particles, which *may be used in combination with* [A] (epoxy resin), [B] (curing agent) and [C] (soluble thermoplastic), significantly increases toughness of an epoxy resin system.


13) No claim is allowed.

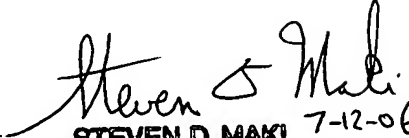
14) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven D. Maki
July 12, 2006


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